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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,983	10/19/2001	Yasuhiro Iwamura	215141US2	7491

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
MONDT, JOHANNES P	

ART UNIT	PAPER NUMBER
3663	

NOTIFICATION DATE	DELIVERY MODE
12/12/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	09/981,983	IWAMURA ET AL.	
	Examiner	Art Unit	
	JOHANNES P. MONDT	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-6,10 and 12-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-6,10 and 12-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 October 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1 1449-Form*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant is herewith notified that another examiner (J.P. Mondt) has assumed responsibility for the examination of the application.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/22/08 has been entered.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “heating device” (claims 1 and 16, both line 19) must be shown or the feature canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Response to Amendment

4. Amendment filed 9/22/08 with said Request for Continued Examination and "Remarks/Arguments" submitted with said Amendment, including Exhibits 1-7 submitted therewith and referred to therein, form the basis for this Office action. Comments on said "Remarks/Arguments" are included below under "Response to Arguments".

Specification

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. ***The specification is objected*** to under 35 U.S.C. 112, first paragraph, as failing to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention, i.e. failing to provide an enabling disclosure.

There is no reputable evidence of record to support any allegations or claims that the invention is capable of operating as indicated in the specification, that any allegations or claims of nuclear transmutation, nuclear reactions, electron-induced nuclear reactions (EINR) or excess heat or thermal energy, any allegation or claims of production of energy due to nuclear and/or chemical reactions are valid and reproducible, nor that the invention as disclosed is capable of operating as indicated and capable of providing useful output.

The objection as previously made of record is herewith included by reference in its entirety. In addition, it was also the general consensus by those skilled in the art and working at these various laboratories that there is no reputable evidence of neutron, gamma ray, tritium or helium production to support the allegation or claim that nuclear reactions are taking place, nor is there any reputable evidence to support the allegation or claim of excess heat production (see US DOE Report containing a Cold Fusion Review (Review on Low Energy Nuclear Reactions, December 1, 2004); see Reviews # 1-18, pages 1-45).

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. ***Claims 1, 4-6, 10 and 12-16*** are rejected under 35 U.S.C. 101 because the claimed invention as disclosed is inoperative and therefore lacks utility.

The reasons that the inventions as disclosed is inoperative are the same as the reasons set forth in section 4 above as to why the specification is objected to and the reasons set forth in section 4 above are accordingly incorporated herein.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> 1. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. ***Claims 1, 4-6, 10 and 12-16*** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The reasons that the inventions as disclosed are not enabled are the same as the reasons set forth in section 4 above as to why the specification is objected to and the reasons set forth in section 4 above are accordingly incorporated herein.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> 2. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. ***Claims 1, 4-6, 10 and 12-16*** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the rejection

overhead (section 6) for lack of enablement implies that the metes and bounds of the claimed invention are vague and ill-defined, rendering the claims indefinite.

5. ***Claims 1, 4, 5, 10 and 12-16*** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The "closed space" (lines 9 and 11 of the independent claims 1 and 16, respectively) is at best poly-interpretable because said closed space is on the one hand formed by the absorption part and the desorption part (i.e., by absorption chamber 31 and desorption chamber 34, respectively); however, the structure body 32 recited to seal said closed space is a finite distance away from the boundaries of said closed space and hence cannot seal the union of the space formed by 31 and 34; at most it seals either of 31 and 34, neither of which being formed by 31 and 34, but only formed by 31 or 34.

6. ***Claims 1, 4-6, 10 and 12-16*** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The absorbed deuterium clearly features in both independent claims in as far as its intended use limitations are concerned ("to provide a flow of the deuterium that penetrates through the structure body…" (final lines of claims 1 and 16). However, the pre-amble is strictly drawn to "a nuclide transmutation device" (lines 1 of both independent claims 1 and 16), while said nuclear transmutation device is recited to comprise (only) a structure body, an absorption part (identified in the specification with absorption chamber 31), a desorption part 34, a high pressurization device 35, a low pressurization device 38, a transmutation

material binding device (see layer 52 in Figure 4), a heating device (although not shown: see Drawings objection overhead), but not deuterium. Therefore, it is not clear whether the claims are drawn to a sub-combination (nuclei transmutation device) or a combination (a system comprising a nuclide transmutation device with deuterium gas). Therefore, the metes and bounds of the claimed invention are left vague and ill-defined, rendering the claims indefinite.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. ***Claims 1, 4-6 and 12-16*** are rejected under 35 U.S.C. 102(b) as anticipated by Iwamura et al (Detection of Anomalous elements, x-rays, and excess heat induced by continuous diffusion of deuterium through multilayer cathode (Pd/CaO/Pd), 7th International Conference on Cold Fusion, p. 167, 1998) (previously cited) in view of Sakano et al (JP-2000-042388 A1) (previously cited).

N.B.: the rejections are provided subject to the noted indefiniteness under 35 USC 112, second paragraph, and address only the structure, not the enablement or utility of the claimed device; The rejections are provided to the best of examiner's understanding, regarding said metes and bounds.

N.B.: Statements of intended use, field of use, "configured to/for", ""to form" clauses, etc. are essentially method limitations or statements of intended or desired

use. Thus, these claims as well as other statements of intended use do not serve to patentably distinguish the claimed structure over that of the reference. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 512 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See MPEP § 2114 which states:

> A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ 2nd 1647
>
> Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531.
>
> Apparatus claims cover what a device is not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

As set forth in MPEP § 2115, a recitation in a claim to the material or article worked upon (i.e., transmutation material) does not serve to limit an apparatus claim.

While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

Note that limitations which are considered to be inherent in a reference, note the case law of In re Ludtke, 169 U.S.P.Q. 563; In re Swinehart, 169 U.S.P.Q. 226; In re Fitzgerald, 205 U.S.P.Q. 594; In re Best et al, 195 U.S.P.Q. 430; and In re Brown, 173 U.S.P.Q. 685, 688.

On claims 1 and 16, Iwamura et al teach the following method steps (see entire article, especially title, abstract and section 2):

a nuclide transmutation apparatus (the "continuous diffusion experimental apparatus" of Figure 1) including a structure body (e.g., Pd/CaO layer in multi-layered cathode of Figure 2) including a hydrogen absorbing metal (Pd) and comprising a low work function material having work function equal to or less than 3 eV (CaO) ;

an absorption part in which one surface of said structure is exposed to deuterium gas at a pressure; see also section 2, paragraph below Figure 1 (Examiner further takes official notice that D_2O is partly vapor and said vapor is partly dissociated under normal pressure and temperature);

a desorption parting which another surface of said structure body is exposed to the deuterium gas at a pressure lower than the pressure in said absorption part;

said absorption and desorption parts capable of forming a closed space sealable by said structure body;

a high pressurization device (inherently a pressure generating device is needed to apply pressure (see first paragraph of section 2; and see "pressure gauge", Fig.1) to generate a high pressure of deuterium on said one surface side of said structured body;

a low pressurization device (Turbo-molecular Pump) capable of reducing the pressure in said desorption part (lower part), said low pressurization part, while, although not specifically taught, an exhaust gas device to exhaust the gas moved by the Turbo Pump would have been obvious to one of ordinary skill in the art if only because gas not exhausted, drives up the pressure, which is counter to the objective an exhaust gas device;

wherein the deuterium of the high pressure side has a higher pressure that the deuterium of the low pressure side (see fourth paragraph of section 2), which inherently causes a diffusion flow of the deuterium from the first surface side to the second surface side.

Furthermore, a heating device for control of the temperature is essential because the initial temperature needs to be known for a useful measurement of excess heat (see section 2, second paragraph), as witnessed for instance by Sakano et al (vacuum exhaust pump 29; see paragraph [0013]).

a transmutation material binding device *capable of* binding a material that undergoes nuclide transmutation on said first surface that undergoes nuclide transmutation to said one (upper) surface of said structured body, in light of the presence of deuterium atoms loaded on said one side of said surface (see section 2, first paragraph).

Finally, as set forth in MPEP § 2115, a recitation in a claim to the material or article worked upon (i.e., transmutation material) does not serve to limit an apparatus claim.

While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

Note that limitations which are considered to be inherent in a reference, note the case law of In re Ludtke, 169 U.S.P.Q. 563; In re Swinehart, 169 U.S.P.Q. 226; In re

Fitzgerald, 205 U.S.P.Q. 594; In re Best et al, 195 U.S.P.Q. 430; and In re Brown, 173 U.S.P.Q. 685, 688.

On claim 4: said transmutation material binding device (device for getting D atoms loaded onto said one surface) comprises a transmutation material lamination device capable of laminating said material that undergoes nuclide transmutation on said one surface of said structure body (see Figure 2).

On claim 5: the claimed transmutation material binding device includes a supply device as claimed, because the D2O is supplied by the device indicated by "Water in" (see Figure 1).

On claim 6: said structure body includes: a base material (Pd) including a hydrogen absorbing metal (palladium absorbs hydrogen and deuterium); a mixed layer formed thereon comprised of said hydrogen absorbing metal (pd) and a material comprises of low work function equal to or less than 3 eV (CaO); and a surface layer formed on said mixed layer comprised of said hydrogen absorbing metal (Pd) (see Figure 2).

On claim 12: the structure body comprises a substrate including Pd ("1 mm") (see Figure 2), a mixed layer CaO/Pd formed on said substrate and including Pd and a material having a work function equal to or less than 3 eV (namely: CaO; same as applicant's only embodiment), and a layer formed on the mixed layer and including Pd (top Pd layer).

On claim 13: the mixed layer comprises layers including CaO and Pd. The claim limitation is an obvious variant, because mere duplication of the CaO/Pd laminate now

identified as the mixed layer would meet the claim. Applicant is reminded that In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (Claims at issue were directed to a water-tight masonry structure wherein a water seal of flexible material fills the joints which form between adjacent pours of concrete. The claimed water seal has a "web" which lies in the joint, and a plurality of "ribs" projecting outwardly from each side of the web into one of the adjacent concrete slabs. The prior art disclosed a flexible water stop for preventing passage of water between masses of concrete in the shape of a plus sign (+). Although the reference did not disclose a plurality of ribs, the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced.). Examiner further notes that the mixed layer is the active portion of the entire device, and hence duplication of it would have been obvious to try with reasonable expectation of success, because deuterium atoms not being active after a diffusion path equal to the total thickness of the CaO/Pd layer still have just as high a probability of being activated after a doubling of the total diffusion path through another CaO/Pd layer, because probability of reaction is independent of history.

On claim 14: the part of the chamber of Teflon on the electrolyte side reads on "absorption camber" (see Figure 1); the part of the Teflon chamber on the vacuum side reads on the "radiation chamber" (clearly some radiation takes place within the concept of applicant's also in the apparatus of Figure 1). The "water in" (Figure 1) must necessarily come from some supply of (heavy) water (because the water is "heavy water, i.e., D2O); it would in view of the expense involved in heavy water have been obvious to provide for a heavy water reservoir in the form of a tank or container, as

witnessed, for instance, by Sakano et al, who teach container 26 leading though pipes top the equivalent of the absorption chamber (see [0013]).

On claim 15: said structure body comprises Pd (loc.cit.).

Response to Arguments

9. Applicant's arguments filed 9/22/08 have been fully considered but they are not persuasive. Applicants' Exhibits do nothing to overcome the rejections under 35 USC 101 and 112, because all articles are either (co-)authored by applicants alone or in combination with co-workers, while (1) applicants provide no experimental, evaluated data, and (2) the consensus within the scientific community regarding cold fusion has not at all altered over time and extremely skeptical, as witnessed by the US DOE Report, December 1, 2004, in which it is concluded that the status of cold fusion has essentially not changed since the times of the press conference by Pons and Fleischmann. Rejections under 35 USC 112, second paragraph are in part an automatic consequence of the lack of enablement and hence must be equally maintained. Regarding the traverse of the art rejections, applicants attribute patentable distinction between gaseous and liquid deuterium source due to the relatively lower exposure in the liquid case. However, this quantitative distinction finds no expression in the claim language and is, furthermore, not substantiated. Applicant's traverse that a transmutation material is not bound on the surface fails to persuade, because deuterium is a nuclide transmutation material and is not elsewhere positively recited, while the absorption of deuterium by the Pd at the surface on the electrolyte side of the structure

body binds said deuterium on the surface. Traverse of the anticipation rejection over Sakano is persuasive only in view of the amendment which overcomes said rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHANNES P. MONDT whose telephone number is (571)272-1919. The examiner can normally be reached on 7:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack W. Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Johannes P Mondt/
Primary Examiner, Art Unit 3663